IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method for use in recognizing the content of a media program, said method comprising the steps of:

filtering each first frequency domain representation of blocks of said media program using a plurality of filters to develop a respective second frequency domain representation of each of said blocks of said media program, said second frequency domain representation of each of said blocks having a reduced number of frequency coefficients with respect to said first frequency domain representation;

grouping frequency coefficients of said second frequency domain representation of said blocks to form segments; ~~and~~

selecting a plurality of said segments.~~;~~ and

comparing selected segments to features of stored programs to identify thereby said media program.

2. (original) The invention as defined in claim 1 wherein each grouping of frequency coefficients of said second frequency domain to form a segment represents blocks that are consecutive in time in said media program.

3. (original) The invention as defined in claim 1 wherein said plurality of filters are arranged in a group that processes a block at a time, the portion of said second frequency domain representation produced by said group for each block forms a frame, and wherein at least two frames are grouped to form a segment.

4. (original) The invention as defined in claim 1 wherein said selected segments correspond to portions of said media program that are not contiguous in time.

1   5.   (original) The invention as defined in claim 1 wherein said plurality of
2   filters includes at least a set of triangular filters.

1   6.   (original) The invention as defined in claim 1 wherein said plurality of
2   filters includes at least a set of log-spaced triangular filters.

1   7.   (original) The invention as defined in claim 1 wherein the segments
2   selected in said selecting step are those that have largest minimum segment energy.

1   8.   (original) The invention as defined in claim 1 wherein the segments
2   selected in said selecting step are selected in accordance with prescribed constraints such
3   that said segments are prevented from being too close to each other.

1   9.   (original) The invention as defined in claim 1 wherein the segments
2   selected in said selecting step are selected for portions of said media program that
3   correspond in time to prescribed search windows that are separated by gaps.

1   10.   (original) The invention as defined in claim 1 wherein the segments
2   selected in said selecting step are those that result in the selected segments having a
3   maximum entropy over the selected segments.

1   11.   (original) The invention as defined in claim 1 further comprising the step
2   of normalizing said frequency coefficients in said second frequency domain
3   representation after performing said grouping step, said normalization being performed
4   on a per-segment basis.

1   12.   (original) The invention as defined in claim 11 wherein said normalization
2   step includes performing at least a preceding-time normalization.

1   13.   (original) The invention as defined in claim 11 wherein said normalization
2   is step includes performing at least an L2 normalization.

1   14.   (original) The invention as defined in claim 1 further comprising the step
2 of storing said selected segments in a database in association with an identifier of said
3 media program.

1   15.   (original) The invention as defined in claim 14 further comprising the step
2 of storing in said database information indicating timing of said selected segments.

1   16.   (original) The invention as defined in claim 1 wherein said first frequency
2 domain representation of blocks of said media program is developed by the steps of:
3   digitizing an audio representation of said media program to be stored in said
4 database;
5   dividing the digitized audio representation into blocks of a prescribed number of
6 samples;
7   smoothing said blocks using a filter; and
8   converting said smoothed blocks into the frequency domain, wherein said
9 smoothed blocks are represented by frequency coefficients.

1   17.   (original) The invention as defined in claim 16 wherein said filter used in
2 said smoothing step is a Hamming window filter.

1   18.   (original) The invention as defined in claim 16 wherein each of said
2 smoothed blocks are converted into the frequency domain in said converting step using a
3 Fast Fourier Transform (FFT).

1   19.   (original) The invention as defined in claim 16 wherein each of said
2 smoothed blocks are converted into the frequency domain in said converting step using a
3 Discrete Cosine Transform (DCT).

1   20.   (cancelled)

1   21.   (original) A method for use in recognizing the content of a media program,
2 comprising the steps of:
3   filtering a first frequency domain representation of said media program using a
4 plurality of filters to develop a second frequency domain representation of said media
5 program having a reduced number of frequency coefficients in said second frequency
6 domain representation with respect to said first frequency domain representation;
7   grouping ones of said second frequency domain representation to form segments;
8 and
9   selecting a plurality of said segments.

1   22.   (original) Apparatus for use in recognizing the content of a media program,
2 comprising:
3   a plurality of filters for filtering a first representation of said media program using
4 frequency coefficients to develop a second representation of said media program that has
5 a reduced number of frequency coefficients with respect to said first representation;
6   means for grouping ones of said coefficients of said second representation to form
7 segments; and
8   means for selecting a plurality of said segments.

1   23.   (original) Apparatus for use in recognizing the content of a media program,
2 comprising:
3   means for filtering a first frequency domain representation of said media program
4 using a plurality of filters to develop a second frequency domain representation of said
5 media program having a reduced number of frequency coefficients in said second
6 frequency domain representation with respect to said first frequency domain
7 representation;
8   means for grouping ones of said second frequency domain representation to form
9 segments; and
10   means for selecting a plurality of said segments.

1   24.   (original) A method for use in recognizing the content of a media program,

2   said method comprising the steps of:

3   filtering each first frequency domain representation of blocks of said media

4   program using a plurality of filters to develop a respective second frequency domain

5   representation of each of said blocks of said media program, said second frequency

6   domain representation of each of said blocks having a reduced number of frequency

7   coefficients with respect to said first frequency domain representation;

8   grouping frequency coefficients of said second frequency domain representation

9   of said blocks to form segments; and

10   searching a database for substantially matching segments, said database having

11   stored therein segments of media programs and respective corresponding program

12   identifiers.

1   25.   (original) The invention as defined in claim 24 further comprising the step

2   of indicating that said media program cannot be identified when substantially matching

3   segments are not found in said database in said searching step.

1   26.   (original) The invention as defined in claim 24 wherein said data base

2   includes information indicating timing of segments of each respective media program

3   identified therein, and wherein a match may be found in said searching step only when

4   the timing of said segments produced in said grouping step substantially matches the

5   timing of said segments stored in said database.

1   27.   (original) The invention as defined in claim 24 wherein said matching

2   between segments is based on the Euclidean distances between segments.

1   28.   (original) The invention as defined in claim 24 further comprising the step

2   of identifying said media program as being the media program indicated by the identifier

3   stored in said database having a best matching score when substantially matching

4   segments are found in said database in said searching step.

1   29.   (original) The invention as defined in claim 28 further comprising the step
2 of determining a speed differential between said media program and a media program
3 identified in said identifying step.

1   30.   (original) The invention as defined in claim 28 wherein said matching
2 score for a program P_i is determined by $P_i = \dfrac{1}{z}\sum\limits_{j=1}^{z} f(S'_{j-1} - S_j(P_i))$.

1   31.   (original) The invention as defined in claim 28 further comprising the
2 steps of:
3   repeating said filtering, grouping, searching and identifying; and
4   determining, in the event of another match, whether said identified program is the
5 same program determined prior to said repetition or a different program.

1   32.   (original) The invention as defined in claim 31 wherein said determining
2 step is based on an overlap score.

1   33.   (original) The invention as defined in claim 32 wherein overlap
2   score is calculated between said program determined prior to said repetition, P0,
3   and said program determined during said repetition, P1, is calculated as
4   Overlap score=$(t_{end}-t_{begin})$/(end time of P1-beginning time of P1)
5   where
6   t_{end} is min(end time of P0, P1); and
7   t_{begin} is max(beginning time of P0, P1).

1   34.   (original) A method for use in recognizing the content of a media program,
2 said method comprising the steps of:
3   filtering a first frequency domain representation of said media program using a
4 plurality of filters to develop a second frequency domain representation of said media
5 program having a reduced number of frequency coefficients in said second frequency
6 domain representation with respect to said first frequency domain representation;

7   grouping ones of said second frequency domain representation to form segments;

8   and

9   searching a database for substantially matching segments, said database having

10 stored therein segments of media programs and respective corresponding program

11 identifiers.

1   35.   (original) Apparatus for use in recognizing the content of a media program,

2   comprising:

3   means for filtering a first frequency domain representation of said media program

4   using a plurality of filters to develop a second frequency domain representation of said

5   media program having a reduced number of frequency coefficients in said second

6   frequency domain representation with respect to said first frequency domain

7   representation;

8   means for grouping ones of said second frequency domain representation to form

9   segments; and

10   means for searching a database for substantially matching segments, said database

11 having stored therein segments of media programs and respective corresponding program

12 identifiers.

1   36.   (original) The invention as defined in claim 35 wherein said first

2   frequency domain representation of said media program comprises a plurality of blocks

3   of coefficients corresponding to respective time domain sections of said media program

4   and said second frequency domain representation of said media program comprises a

5   plurality of blocks of coefficients corresponding to respective time domain sections of

6   said media program.

1   37.   (currently ammended) A computer readable storage arranged to store

2   segments derived from, and representative of, various media programs, said segments of

3   each respective one of said media programs being stored in said database so as to be

4   associated with a ~~respective~~unique media program identifier.~~.~~:

5   wherein each of said segments is developed by filtering a first frequency domain

6   representation of said media program using a plurality of filters to develop a second

7   frequency domain representation of said media program having a reduced number of

8   frequency coefficients in said second frequency domain representation with respect to

9   said first frequency domain representation, and grouping ones of said second frequency

10 domain representation.

1   38   (cancelled)

1   39.   (cancelled)

1   40.   (cancelled)